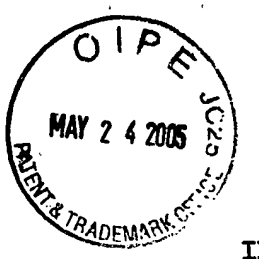

Dkt. 00250

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: CHUAN-BAO WANG et al	Group Art Unit: 1743 Examiner: B. Sines
Serial No.: 09/771,882	
Filed: January 30, 2001	

For: POISON RESISTANT COMBUSTIBLE GAS SENSORS AND METHOD FOR WARNING OF POISONING

DECLARATION UNDER 37 CFR 1.132

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

I, Chuan-Bao Wang do hereby declare as follows:

I am a named inventor of the above-identified patent application.

I am familiar with the prior art cited by the Examiner in the Final Office Action mailed January 11, 2005.

I am also familiar with the remarks of the Examiner in the Advisory Action mailed April 5, 2005.

In the Advisory Action, it was argued that lithium compounds need not be utilized, and that lithium is notoriously well known in the art as a catalyst poison, such that the person of ordinary skill would have avoided the use of lithium.

In order to determine if the lithium was in fact acting as a catalyst poison in my previous testing, I conducted a further

test.

A gas-sensing element ("Sensing-4") according to the teachings of the Friese patent but without lithium (similar to column 3, lines 21-31) was prepared as follows: A slurry "A" was first prepared by adding 0.2 g $PdCl_2$ and 2.0 g porous alumina into 25.0 ml de-ionized water. The slurry "A" was then applied to a coil, followed by passing a current through the coil to heat it to 500-700°C to drive off the water from the slurry, consolidate the alumina deposit and decompose palladium chloride to palladium oxide and metal form. Multiple coats and heating were applied until a desired size was obtained. A resulting pellet "P" was formed.

The pellet "P" described above was immersed for 3 minutes in a solution "F" 1M $Al(NO_3)_3$ at room temperature. The solution was allowed to drip off for ~10 minutes, and pellet "P" was heated to 1000°C in air for 2 hours to decompose the $Al(NO_3)_3$ to aluminum oxide. The "Sensing-4" element was thereby formed.

A reference bead was fabricated by applying an aqueous solution containing aluminum nitrate to a coated coil, followed by passing a current through the coil to heat the coil to 500-900°C to decompose aluminum nitrate to alumina. Multiple coats and heat were applied until a desired size was obtained. Then, an aqueous potassium hydroxide solution was applied so that the catalytic activity of alumina was completely suppressed. The reference bead was paired with the sensing element "Sensing-4" to form "Sensor-4". The "Sensor-4" was connected into a Wheatstone bridge circuits (refer to Fig. 1 of this invention) and tested using 1.0 % methane/air.

The results of the testing of "Sensor-4" is included in Table 1 below, in comparison with tests of "Sensor-1", "Sensor-2", and "Sensor-3," prepared as discussed in my declaration dated March 18, 2005, and submitted with the Amendment filed on March 21, 2005.

Table 1. Sensitivity Comparison

Sensor No.	Sensor-1	Sensor-2	Sensor-3	Sensor-4
Sensitivity (mV/% methane)	18.2	0.05	3.6	1.6

It was observed that the sensor (Sensor-4) fabricated according to Friese's method but *without lithium* also gave extremely low sensitivity (1.6 mV/% methane), even worse than the example of Friese et al in which the lithium compound and catalyst were impregnated into the same layer.

I believe that the reason for the poor performance of Sensor 4 is that the catalyst was physically covered by the aluminum oxide. The physically covering effect is even much larger than the lithium poisoning effect.

I further declare that all statements made by me herein are true and all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application or any patent issued thereon.

5-23-05
Date

Chuan-Bao Wang